

# SEQUENCE LISTING

<110> Ensoli, Barbara

<120> HIV-1 TAT, OR DERIVATIVES THEREOF FOR  
PROPHYLACTIC AND THERAPEUTIC VACCINATION

<130> 11340-003-999

<140> 09/555,534

<141> 2000-05-31

<150> PCT/EP98/07721

<151> 1998-11-30

<150> RM97A000743

<151> 1997-12-01

<160> 36

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 261

<212> DNA

<213> Human immunodeficiency virus

<220>

<221> CDS

<222> (1)...(261)

<223> Wild-type HIV-1 Tat

<400> 1

atg gag cca gta gat cct aga cta gag ccc tgg aag cat cca gga agt	48
Met Glu Pro Val Asp Pro Arg Leu Glu Pro Trp Lys His Pro Gly Ser	
1 5 10 15	
cag cct aaa act gct tgt acc aat tgc tat tgt aaa aag tgt tgc ttt	96
Gln Pro Lys Thr Ala Cys Thr Asn Cys Tyr Cys Lys Lys Cys Cys Phe	
20 25 30	
cat tgc caa gtt tgt ttc ata aca aaa gcc tta ggc atc tcc tat ggc	144
His Cys Gln Val Cys Phe Ile Thr Lys Ala Leu Gly Ile Ser Tyr Gly	
35 40 45	
agg aag aag cgg aga cag cga cga aga cct cct caa ggc agt cag act	192
Arg Lys Lys Arg Arg Gln Arg Arg Arg Pro Pro Gln Gly Ser Gln Thr	
50 55 60	
cat caa gtt tct cta tca aag cag ccc acc tcc caa tcc cga ggg gac	240
His Gln Val Ser Leu Ser Lys Gln Pro Thr Ser Gln Ser Arg Gly Asp	
65 70 75 80	
ccg aca ggc ccg aag gaa tag	261
Pro Thr Gly Pro Lys Glu *	
85	

<210> 2

<211> 86

<212> PRT  
 <213> Human immunodeficiency virus

<220>  
 <223> Wild-type HIV-1 Tat

<400> 2  
 Met Glu Pro Val Asp Pro Arg Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Thr Asn Cys Tyr Cys Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Ile Thr Lys Ala Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Arg Arg Gln Arg Arg Arg Pro Pro Gln Gly Ser Gln Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Thr Ser Gln Ser Arg Gly Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu  
 85

<210> 3  
 <211> 261  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <221> CDS  
 <222> (1)...(261)  
 <223> HIV-1 Tat having an amino acid substitution at position 22 (changed  
 from Cys to Gly)

<400> 3  
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 Met Glu Pro Val Asp Pro Arg Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 cag cct aaa act gct ggt acc aat tgc tat tgt aaa aag tgt tgc ttt 96  
 Gln Pro Lys Thr Ala Gly Thr Asn Cys Tyr Cys Lys Lys Cys Cys Phe  
 20 25 30  
 cat tgc caa gtt tgt ttc ata aca aaa gcc tta ggc atc tcc tat ggc 144  
 His Cys Gln Val Cys Phe Ile Thr Lys Ala Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 agg aag aag cgg aga cag cga cga aga cct cct caa ggc agt cag act 192  
 Arg Lys Lys Arg Arg Gln Arg Arg Arg Pro Pro Gln Gly Ser Gln Thr  
 50 55 60  
 cat caa gtt tct cta tca aag cag ccc acc tcc caa tcc cga ggg gac 240  
 His Gln Val Ser Leu Ser Lys Gln Pro Thr Ser Gln Ser Arg Gly Asp  
 65 70 75 80  
 ccg aca ggc ccg aag gaa tag 261  
 Pro Thr Gly Pro Lys Glu \*  
 85

<210> 4  
 <211> 86

<212> PRT  
 <213> Artificial Sequence

<220>

<223> HIV-1 Tat having an amino acid substitution at position 22 (changed from Cys to Gly)

<400> 4

Met	Glu	Pro	Val	Asp	Pro	Arg	Leu	Glu	Pro	Trp	Lys	His	Pro	Gly	Ser	
1				5					10					15		
Gln	Pro	Lys	Thr	Ala	Gly	Thr	Asn	Cys	Tyr	Cys	Lys	Lys	Cys	Cys	Phe	
			20					25					30			
His	Cys	Gln	Val	Cys	Phe	Ile	Thr	Lys	Ala	Leu	Gly	Ile	Ser	Tyr	Gly	
		35					40					45				
Arg	Lys	Lys	Arg	Arg	Gln	Arg	Arg	Arg	Pro	Pro	Gln	Gly	Ser	Gln	Thr	
	50				55						60					
His	Gln	Val	Ser	Leu	Ser	Lys	Gln	Pro	Thr	Ser	Gln	Ser	Arg	Gly	Asp	
65				70						75					80	
Pro	Thr	Gly	Pro	Lys	Glu											
				85												

<210> 5

<211> 261

<212> DNA

<213> Artificial Sequence

<220>

<221> CDS

<222> (1)...(261)

<223> HIV-1 Tat having an amino acid substitution at position 41 (changed from Lys to Thr)

<400> 5

atg	gag	cca	gta	gat	cct	aga	cta	gag	ccc	tgg	aag	cat	cca	gga	agt	48
Met	Glu	Pro	Val	Asp	Pro	Arg	Leu	Glu	Pro	Trp	Lys	His	Pro	Gly	Ser	
1				5					10					15		
cag	cct	aaa	act	gct	tgt	acc	aat	tgc	tat	tgt	aaa	aag	tgt	tgc	ttt	96
Gln	Pro	Lys	Thr	Ala	Cys	Thr	Asn	Cys	Tyr	Cys	Lys	Lys	Cys	Cys	Phe	
			20					25					30			
cat	tgc	caa	gtt	tgt	ttc	ata	aca	aca	gcc	tta	ggc	atc	tcc	tat	ggc	144
His	Cys	Gln	Val	Cys	Phe	Ile	Thr	Thr	Ala	Leu	Gly	Ile	Ser	Tyr	Gly	
		35					40					45				
agg	aag	aag	cgg	aga	cag	cga	cga	aga	cct	cct	caa	ggc	agt	cag	act	192
Arg	Lys	Lys	Arg	Arg	Gln	Arg	Arg	Arg	Pro	Pro	Gln	Gly	Ser	Gln	Thr	
	50				55						60					
cat	caa	gtt	tct	cta	tca	aag	cag	ccc	acc	tcc	caa	tcc	cga	ggg	gac	240
His	Gln	Val	Ser	Leu	Ser	Lys	Gln	Pro	Thr	Ser	Gln	Ser	Arg	Gly	Asp	
65				70					75						80	
ccg	aca	ggc	ccg	aag	gaa	tag										261
Pro	Thr	Gly	Pro	Lys	Glu	*										
				85												

<210> 6

<211> 86

<212> PRT  
 <213> Artificial Sequence

<220>

<223> HIV-1 Tat having an amino acid substitution at position 41 (changed from Lys to Thr)

<400> 6

Met	Glu	Pro	Val	Asp	Pro	Arg	Leu	Glu	Pro	Trp	Lys	His	Pro	Gly	Ser
1				5					10					15	
Gln	Pro	Lys	Thr	Ala	Cys	Thr	Asn	Cys	Tyr	Cys	Lys	Lys	Cys	Cys	Phe
			20					25					30		
His	Cys	Gln	Val	Cys	Phe	Ile	Thr	Thr	Ala	Leu	Gly	Ile	Ser	Tyr	Gly
		35					40					45			
Arg	Lys	Lys	Arg	Arg	Gln	Arg	Arg	Arg	Pro	Pro	Gln	Gly	Ser	Gln	Thr
	50					55					60				
His	Gln	Val	Ser	Leu	Ser	Lys	Gln	Pro	Thr	Ser	Gln	Ser	Arg	Gly	Asp
65					70					75					80
Pro	Thr	Gly	Pro	Lys	Glu										
				85											

<210> 7

<211> 252

<212> DNA

<213> Artificial Sequence

<220>

<221> CDS

<222> (1)...(252)

<223> HIV-1 Tat having a three-amino acid deletion at positions 78-80 (Arginine-Glycine-Aspartic acid (RGD))

<400> 7

atg	gag	cca	gta	gat	cct	aga	cta	gag	ccc	tgg	aag	cat	cca	gga	agt	48
Met	Glu	Pro	Val	Asp	Pro	Arg	Leu	Glu	Pro	Trp	Lys	His	Pro	Gly	Ser	
1				5					10					15		
cag	cct	aaa	act	gct	tgt	acc	aat	tgc	tat	tgt	aaa	aag	tgt	tgc	ttt	96
Gln	Pro	Lys	Thr	Ala	Cys	Thr	Asn	Cys	Tyr	Cys	Lys	Lys	Cys	Cys	Phe	
			20					25					30			
cat	tgc	caa	gtt	tgt	ttc	ata	aca	aaa	gcc	tta	ggc	atc	tcc	tat	ggc	144
His	Cys	Gln	Val	Cys	Phe	Ile	Thr	Lys	Ala	Leu	Gly	Ile	Ser	Tyr	Gly	
		35					40					45				
agg	aag	aag	cgg	aga	cag	cga	cga	aga	cct	cct	caa	ggc	agt	cag	act	192
Arg	Lys	Lys	Arg	Arg	Gln	Arg	Arg	Arg	Pro	Pro	Gln	Gly	Ser	Gln	Thr	
	50					55					60					
cat	caa	gtt	tct	cta	tca	aag	cag	ccc	acc	tcc	caa	tcc	ccg	aca	ggc	240
His	Gln	Val	Ser	Leu	Ser	Lys	Gln	Pro	Thr	Ser	Gln	Ser	Pro	Thr	Gly	
65					70				75						80	
ccg	aag	gaa	tag													252
Pro	Lys	Glu	*													

<210> 8

<211> 83

<212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV-1 Tat having a three-amino acid deletion at positions 78-80  
 (Arginine-Glycine-Aspartic acid (RGD))

<400> 8  
 Met Glu Pro Val Asp Pro Arg Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Thr Asn Cys Tyr Cys Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Ile Thr Lys Ala Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Arg Arg Gln Arg Arg Arg Pro Pro Gln Gly Ser Gln Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Thr Ser Gln Ser Pro Thr Gly  
 65 70 75 80  
 Pro Lys Glu

<210> 9  
 <211> 252  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <221> CDS  
 <222> (1)...(252)  
 <223> HIV-1 Tat having a three-amino acid deletion at positions 78-80  
 (Arginine-Glycine-Aspartic acid (RGD)) and having an amino acid  
 substitution at position 41 (from Lys to Thr)

<400> 9  
 atg gag cca gta gat cct aga cta gag ccc tgg aag cat cca gga agt 48  
 Met Glu Pro Val Asp Pro Arg Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 cag cct aaa act gct tgt acc aat tgc tat tgt aaa aag tgt tgc ttt 96  
 Gln Pro Lys Thr Ala Cys Thr Asn Cys Tyr Cys Lys Lys Cys Cys Phe  
 20 25 30  
 cat tgc caa gtt tgt ttc ata aca aca gcc tta ggc atc tcc tat ggc 144  
 His Cys Gln Val Cys Phe Ile Thr Thr Ala Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 agg aag aag cgg aga cag cga cga aga cct cct caa ggc agt cag act 192  
 Arg Lys Lys Arg Arg Gln Arg Arg Arg Pro Pro Gln Gly Ser Gln Thr  
 50 55 60  
 cat caa gtt tct cta tca aag cag ccc acc tcc caa tcc ccg aca ggc 240  
 His Gln Val Ser Leu Ser Lys Gln Pro Thr Ser Gln Ser Pro Thr Gly  
 65 70 75 80  
 ccg aag gaa tag 252  
 Pro Lys Glu \*

<210> 10

<211> 83  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV-1 Tat having a three-amino acid deletion at positions 78-80  
 (Arginine-Glycine-Aspartic acid (RGD)) and having an amino  
 acid substitution at position 41 (changed from Lys to Thr)

<400> 10  
 Met Glu Pro Val Asp Pro Arg Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Thr Asn Cys Tyr Cys Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Ile Thr Thr Ala Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Arg Arg Gln Arg Arg Arg Pro Pro Gln Gly Ser Gln Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Thr Ser Gln Ser Pro Thr Gly  
 65 70 75 80  
 Pro Lys Glu

<210> 11  
 <211> 20  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV-1 Tat peptide

<400> 11  
 Met Glu Pro Val Asp Pro Arg Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr  
 20

<210> 12  
 <211> 20  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV-1 Tat peptide

<400> 12  
 Ala Cys Thr Asn Cys Tyr Cys Lys Lys Cys Cys Phe His Cys Gln Val  
 1 5 10 15  
 Cys Phe Ile Thr  
 20

<210> 13  
 <211> 16  
 <212> PRT  
 <213> Artificial Sequence

<220>

<223> HIV-1 Tat peptide

<400> 13

Gln	Val	Cys	Phe	Ile	Thr	Lys	Ala	Leu	Gly	Ile	Ser	Tyr	Gly	Arg	Lys
1				5					10					15	

<210> 14

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV-1 Tat peptide

<400> 14

Ser	Tyr	Gly	Arg	Lys	Lys	Arg	Arg	Gln	Arg	Arg	Arg	Pro	Pro	Gln
1				5				10						15

<210> 15

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV-1 Tat peptide

<400> 15

Arg	Pro	Pro	Gln	Gly	Ser	Gln	Thr	His	Gln	Val	Ser	Leu	Ser	Lys	Gln
1			5						10					15	

<210> 16

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV-1 Tat peptide

<400> 16

His	Gln	Val	Ser	Leu	Ser	Lys	Gln	Pro	Thr	Ser	Gln	Ser	Arg	Gly	Asp
1				5					10					15	

<210> 17

<211> 14

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV-1 Tat peptide

<400> 17

Pro	Thr	Ser	Gln	Ser	Arg	Gly	Asp	Pro	Thr	Gly	Pro	Lys	Glu
1				5					10				

<210> 18

<211> 15

<212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Forward primer Rev  
  
 <400> 18  
 atggcaggaa gaagc 15  
  
 <210> 19  
 <211> 15  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Reverse primer Rev  
  
 <400> 19  
 ctattcttta gttcc 15  
  
 <210> 20  
 <211> 15  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Forward primer Nef  
  
 <400> 20  
 atgggtggca agtgg 15  
  
 <210> 21  
 <211> 15  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Reverse primer Nef  
  
 <400> 21  
 tcagcagtcc ttgta 15  
  
 <210> 22  
 <211> 15  
 <212> DNA  
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 <220>  
 <223> Forward primer Gag  
  
 <400> 22  
 atgggtgcga gagcg 15  
  
 <210> 23  
 <211> 15  
 <212> DNA  
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 <220>  
 <223> Reverse primer Gag



<400> 23	
ttattgtgac gaggg	15
<210> 24	
<211> 15	
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<223> Forward primer IL-12	
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atgtggcccc ctggg	15
<210> 25	
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<212> DNA	
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<223> Reverse primer IL-12	
<400> 25	
ttaggaagca ttcag	15
<210> 26	
<211> 15	
<212> DNA	
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<220>	
<223> Forward primer IL-15	
<400> 26	
atgagaattt cgaaa	15
<210> 27	
<211> 15	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Reverse primer IL-15	
<400> 27	
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<210> 28	
<211> 15	
<212> DNA	
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<220>	
<223> Forward primer Tat	
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atggagccag tagat	15
<210> 29	
<211> 15	
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<213> Artificial Sequence  
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 <223> Reverse primer Tat  
 <400> 29  
 ctattccttc gggcc 15  
 <210> 30  
 <211> 27  
 <212> DNA  
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 <220>  
 <223> Forward primer Tat/Rev  
 <400> 30  
 ggcccgaagg aaatggcagg aagaagc 27  
 <210> 31  
 <211> 27  
 <212> DNA  
 <213> Artificial Sequence  
 <220>  
 <223> Forward primer Tat/Nef  
 <400> 31  
 ggcccgaagg aaatgggtgg caagtgg 27  
 <210> 32  
 <211> 28  
 <212> DNA  
 <213> Artificial Sequence  
 <220>  
 <223> Forward primer Tat/Gag  
 <400> 32  
 ggccctgaag gaaatgggtg cgagagcg 28  
 <210> 33  
 <211> 27  
 <212> DNA  
 <213> Artificial Sequence  
 <220>  
 <223> Forward primer Tat/IL-12  
 <400> 33  
 ggcccgaagg aaatgtggcc ccctggg 27  
 <210> 34  
 <211> 27  
 <212> DNA  
 <213> Artificial Sequence  
 <220>  
 <223> Forward primer Tat/IL-15  
 <400> 34

ggcccgaagg aaatgagaat ttcgaaa

27

<210> 35

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer SG1096Ngag

<400> 35

ttaggctacg acccggcgga aaga

24

<210> 36

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer SG1592CgagD

<400> 36

atagggggtg cagccttctg acag

24